- a first error correction code (ECC) encoder operable to ECC encode the first data stream, including the data for demodulation, to produce an ECC encoded first data stream, wherein said first ECC encoder is a BCH encoder,

- a second error correction code (ECC) encoder operable to ECC encode the second data stream to produce an ECC encoded second data stream, wherein said second ECC encoder is a Reed Solomon encoder,

- a modulator operable to assign the ECC encoded first data stream and the ECC encoded second data stream to a respective constellation in a vector space diagram to produce modulated signals wherein the number of signal points of the constellation for the ECC encoded first data stream is different from the number of signal points of the constellation for the ECC encoded second data stream, and

- a transmitter operable to transmit the modulated signals.

37. A signal receiving apparatus, comprising:

- a demodulator operable to demodulate a received signal to produce an ECC encoded first data stream and an ECC encoded second data stream, the received signal having information of a first data stream and a second data stream, both of which are ECC-encoded, wherein each ECC encoded data stream is assigned to a respective constellation in a vector space diagram and the number of signal points of the constellation for the ECC encoded first data stream is different from the number of signal points of the constellation for the ECC encoded second data stream,

the first data stream having data for demodulation for demodulating the modulated signals corresponding to the second data stream,

wherein said demodulator produces the ECC encoded second data stream according to the data for demodulation;

- a first error correction code (ECC) decoder operable to ECC decode the ECC encoded first data stream, including the data for demodulation, to produce the first data stream, wherein said first ECC decoder is a BCH decoder, and

- a second error correction code (ECC) decoder operable to ECC decode the ECC encoded second data stream to produce the second data stream, wherein said second ECC decoder is a Reed Solomon decoder.

38.   A signal transmission system comprising a signal transmission apparatus for transmitting a first data stream and a second data stream, wherein the first data stream has data for demodulation for demodulating the modulated signals corresponding to the second data stream, and a signal receiving apparatus,

said signal transmission apparatus comprising:

- a first error correction code (ECC) encoder operable to ECC encode the first data stream, including the data for demodulation, to produce an ECC encoded first data stream, wherein said first ECC encoder is a BCH encoder,

- a second error correction code (ECC) encoder operable to ECC encode the second data stream to produce an ECC encoded second data stream, wherein said second ECC encoder is a Reed Solomon encoder,

- a modulator operable to assign the ECC encoded first data stream and the ECC encoded second data stream to a respective constellation in a vector space diagram to produce modulated signals wherein the number of signal points of the constellation for the ECC encoded first data stream is different from the number of signal points of the constellation for the ECC encoded second data stream, and

- a transmitter operable to transmit the modulated signals,

said signal receiving apparatus comprising:

- a demodulator operable to demodulate a received signal to produce the ECC encoded first data stream and the ECC encoded second data stream, wherein said demodulator produces the ECC encoded second data stream according to the data for demodulation;

- a first error correction code (ECC) decoder operable to ECC decode the ECC encoded first data stream, including the data for demodulation, to produce the first data stream, wherein said first ECC decoder is a BCH decoder, and

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- a second error correction code (ECC) decoder operable to ECC decode the ECC encoded second data stream to produce the second data stream, wherein said second ECC decoder is a Reed Solomon decoder.

39. A signal transmission method for transmitting a first data stream and a second data stream, wherein the first data stream has data for demodulation for demodulating the modulated signals corresponding to the second data stream, said signal transmission method comprising:

    - first error correction code (ECC) encoding the first data stream, including the data for demodulation, to produce an ECC encoded first data stream, wherein said first ECC encoding is a BCH encoding,

    - second error correction code (ECC) encoding the second data stream to produce an ECC encoded second data stream, wherein said second ECC encoding is a Reed Solomon encoding,

    - assigning the ECC encoded first data stream and the ECC encoded second data stream to a respective constellation in a vector space diagram to produce modulated signals wherein the number of signal points of the constellation for the ECC encoded first data stream is different from the number of signal points of the constellation for the ECC encoded second data stream, and

    - transmitting the modulated signals.

40. A signal receiving method, comprising:

    - demodulating a received signal to produce an ECC encoded first data stream and an ECC encoded second data stream, the received signal having information of a first data stream and a second data stream, both of which are ECC-encoded, wherein each ECC encoded data stream is assigned to a respective constellation in a vector space diagram and the number of signal points of the constellation for the ECC encoded first data stream is different from the number of signal points of the constellation for the ECC encoded second data stream,

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the first data stream having data for demodulation for demodulating the modulated signals corresponding to the second data stream,

wherein said demodulating produces the ECC encoded second data stream according to the data for demodulation,

- first error correction code (ECC) decoding the ECC encoded first data stream, including the data for demodulation, to produce the first data stream, wherein said first ECC decoding is a BCH decoding, and

- second error correction code (ECC) decoding the ECC encoded second data stream to produce the second data stream, wherein said second ECC decoding is a Reed Solomon decoding.

41.   A signal transmitting and receiving method comprising a signal transmission method for transmitting a first data stream and a second data stream, wherein the first data stream has data for demodulation for demodulating the modulated signals corresponding to the second data stream, and a signal receiving method,

said signal transmission method comprising:

- first error correction code (ECC) encoding the first data stream, including the data for demodulation, to produce an ECC encoded first data stream, wherein said first ECC encoding is a BCH encoding,

- second error correction code (ECC) encoding the second data stream to produce an ECC encoded second data stream, wherein said second ECC encoding is a Reed Solomon encoding,

- assigning the ECC encoded first data stream and the ECC encoded second data stream to a respective constellation in a vector space diagram to produce modulated signals wherein the number of signal points of the constellation for the ECC encoded first data stream is different from the number of signal points of the constellation for the ECC encoded second data stream, and

- transmitting the modulated signals,

said signal receiving method comprising:

- demodulating a received signal to produce the ECC encoded first data stream and the ECC encoded second data stream, wherein said demodulating produces the ECC encoded second data stream according to the data for demodulation,

- first error correction code (ECC) decoding the ECC encoded first data stream, including the data for demodulation, to produce the first data stream, wherein said first ECC decoding is a BCH decoding, and

- second error correction code (ECC) decoding the ECC encoded second data stream to produce the second data stream, wherein said second ECC decoding is a Reed Solomon decoding.